Optifood

Developed by London School of Hygiene & Tropical Medicine and the World Health Organization’s Departments of Maternal, Newborn, Child and Adolescent Health and Nutrition for Health and Development

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Summary
Designed to develop and test population-specific food-based recommendations, and to identify “nutrient gaps” in local diets.

Key questions addressed
Optifood’s three-analytical modules (see Figure 1, Modules 2-4), use linear programming analyses to address the following key questions:

Module 2: Is it possible to model a realistic diet, using local foods, that meets energy requirements and recommended nutrient intake (RNI) levels of protein and 11 micronutrients1? If such a diet cannot be modelled, which nutrient requirements cannot be met and to what extent (i.e., % RNI achieved)? Which foods or food sub-groups are the best sources of nutrients in these diets? Which individual Food-Based Recommendations (FBRs) (e.g., 7-servings of fruit/w, 5-servings of green leafy vegetables/w, 7-servings of milk/w, etc.) are worthwhile testing in Module 3?

Module 3: Is it possible to select a diet that achieves energy requirements and the RNI for all nutrients2? When developing a set of FBRs, which set will ensure that only a low percentage of the population is at risk of inadequate intakes for the highest number of nutrients? Which nutrients will likely remain inadequate for some individuals in the population? When testing an existing set of FBRs - will it ensure dietary adequacy for the population?

Module 4: What is the lowest cost, nutritionally “best” diet? What foods does it include and to what extent does it meet nutrient requirements? What are the most expensive food sources of nutrients in this diet? What are the most expensive RNIs to achieve?

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Figure 1: Optifood Analysis Structure

Optifood Analysis Structure

Model Constraints
- Food list
  - Min & max g/wk
- Food Patterns
  - Min & max serves/wk
  - Main food groups
  - Staples & snacks
  - Food sub-groups
- Energy content
- Maximum cost (optional)
- Food-based recommendations (FBRs)
- Nutrient content

Module Outputs
- Check parameters
- 19 models
  - 2 Nutritionally best diets
    - Identify FBRs to test
  - Identify ‘Problem nutrients’ 2 models
  - Test & compare alternative FBRs
    - ‘Problem nutrient’ 30 models
  - Lowest cost nutritionally best diet
    - Cost of foods & nutrients 282 models
How does this help nutrition decision making?

Optifood helps select FBRs for a population, and identifies ‘problem nutrients’ i.e., nutrients that will likely remain low in diets based on locally available foods as they are currently consumed. This information can inform decision-makers involved in developing food-based dietary guidelines, fortification policies or agriculture programmes/policies; or for advocacy purposes on the need to increase availability, accessibility and affordability of nutritious foods.

What are the data needs?

The data needs are: (1) quantitative individual level dietary data, for a population of interest, including a list of foods consumed, the minimum and maximum grams per week each food could be realistically consumed, the range in number of servings per week that foods from each food group, food sub-group, staple foods and snacks could be consumed; (2) average body weight of the population; (3) for adults, an estimate of average physical activity levels (Optifood provides optional values); (4) an estimate of the bioavailability of iron (options = 5%, 10%, 12% and 15%) and zinc (options = low, moderate, high); and (5) the cost per 100 g edible portion for each food modelled (optional). If food cost data are not available, then Module 4 cannot be run. Optifood has an internal food composition table (n=1937 foods / food composite dishes), algorithms to calculate average energy and protein requirements and RNIs (FAO/WHO algorithms and RNIs). Recipes, for these food composite dishes are not documented in Optifood. The user has the option to upload locally-specific energy requirements, RNIs and food composition table or to modify those internal to Optifood.

How long does it take?

Time and costs for Optifood are highly variable and depends on data available. For example – if copying a model that was previously set-up and just modifying it then it could take less than 30 minutes for one full analyses for one target group; but if you have to create a food composition table and collect dietary data from different regions of the country –then it could take many months.

Strengths and limitations?

Strengths:
- Scope: it can be used to identify “problem nutrients”, select and evaluate FBRs for any group (by age, sex or life stage) in any country
- Flexibility: country-specific RNIs and food composition data can be used in the analyses; and from the list of nutrients users can select the RNIs they would like to model.
- Rapid: Once the model parameters are set-up, in Optifood, each analysis takes seconds to run and a complete set of analyses can be done in several hours. There is also an option to copy model parameters (e.g., to add novel foods to the food list), which saves time and ensures model comparability.
- Rigor: all model parameters are locked after setting-up the model parameters, which ensures comparability across all module outputs.

Limitations:
- Considerable time may be required to collect and process the data needed to set-up, in Optifood, model parameters in preparation for an Optifood analyses. Relatively high levels of technical expertise required: the quality of the results and their interpretation depends on the quality of the data used to define model parameters (ideally 7-days of intake) and the skill of the end-user/s. There is an element of subjectivity when defining model parameters and running Module 3 to test and select a set of food based recommendations.

Learn more at:
https://www.nyas.org/NMC